

WHAT IS CLAIMED IS:

- Subj* 1. A drive mechanism for a bicycle transmission assist mechanism comprising:  
a crank arm having a rotational axis; and  
5 a drive member including:  
a first abutment facing a forward rotational direction of the crank arm; and  
a non-concave first sloped surface extending from a radially outer portion of  
the abutment and facing a rearward rotational direction of the crank arm.
- 10 2. The drive mechanism according to claim 1 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm.
- 15 3. The drive mechanism according to claim 1 wherein the first sloped surface has an arcuate shape.
- 16 4. The drive mechanism according to claim 1 wherein the drive member is coaxial with the rotational axis.
- 20 5. The drive mechanism according to claim 1 wherein the drive member is one-piece with the crank arm.
- 25 6. The drive mechanism according to claim 1 wherein the drive member comprises an annular drive ring mounted around the rotational axis.
- 26 7. The drive mechanism according to claim 6 wherein an inner peripheral surface of the drive ring includes a plurality of drive ring splines, and wherein an outer peripheral surface of the crank arm includes a plurality of crank arm splines that engage the plurality of drive ring splines.
- 30 8. The drive mechanism according to claim 1 wherein the drive member includes:  
a second abutment facing the forward rotational direction of the crank arm; and  
a non-concave second sloped surface facing the rearward rotational direction of the

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Claim  
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9. The drive mechanism according to claim 8 wherein the first abutment is located substantially  $180^{\circ}$  from the second abutment.

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10. The drive mechanism according to claim 9 wherein the drive member is coaxial with the rotational axis.

10 N 11. The drive mechanism according to claim 10 wherein the drive member is one-piece with the crank arm.



12. The drive mechanism according to claim 11 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm, and wherein the second abutment is substantially perpendicular to an outer peripheral surface of the crank arm.

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N 13. The drive mechanism according to claim 12 wherein the first sloped surface has an arcuate shape, and wherein the second sloped surface has an arcuate shape.

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14. The drive mechanism according to claim 10 wherein the drive member comprises an annular drive ring mounted around the rotational axis.

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15. The drive mechanism according to claim 14 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm, and wherein the second abutment is substantially perpendicular to an outer peripheral surface of the crank arm.

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N 16. The drive mechanism according to claim 15 wherein the first sloped surface has an arcuate shape, and wherein the second sloped surface has an arcuate shape.

W 17. The drive mechanism according to claim 16 wherein an inner peripheral surface of the drive ring includes a plurality of drive ring splines, and wherein an outer peripheral

surface of the crank arm includes a plurality of crank arm splines that engage the plurality of drive ring splines.

18. The drive mechanism according to claim 1 wherein the crank arm is a left-side  
5 V crank arm.

19. The drive mechanism according to claim 1 wherein the crank arm is a right-side  
crank arm.

10 20. The drive mechanism according to claim 1 wherein the rotational axis is disposed  
at a first end of the crank arm, and further comprising a pedal mounting hole disposed at an  
opposite second end of the crank arm.

15 21. The drive mechanism according to claim 1 wherein the crank arm includes a  
sprocket mounting member for mounting a sprocket to the crank arm.

22. The drive mechanism according to claim 21 wherein the sprocket mounting  
member comprises four sprocket mounting arms.

20 23. The drive mechanism according to claim 21 further comprising:  
a large diameter sprocket retained to the sprocket mounting member; and  
a small diameter sprocket retained to the sprocket mounting member.

25 24. The drive mechanism according to claim 23 wherein the large diameter sprocket  
includes a shift assist mechanism for assisting travel of a chain between the small diameter  
sprocket and the large diameter sprocket.

29 25. The drive mechanism according to claim 24 wherein the shift assist mechanism  
comprises a chain support member disposed on a side surface of the large diameter sprocket  
facing the small diameter sprocket.

26. The drive mechanism according to claim 23 wherein a first plane containing an  
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✓ inner side surface of the drive member is disposed laterally inwardly from an inner side surface of the small diameter sprocket.

5 ✓ 27. The drive mechanism according to claim 26 wherein a second plane containing an outer side surface of the drive member is disposed laterally inwardly from the inner side surface of the small diameter sprocket.

DJN 10 28. The drive mechanism according to claim 1 further comprising a dust seal disposed along a circumferential surface of the crank arm.

W 10 29. The drive mechanism according to claim 1 wherein an inner side surface of the crank arm includes a groove.

W 15 30. The drive mechanism according to claim 29 wherein the groove is an annular groove.

✓ 20 31. The drive mechanism according to claim 1 ~~wherein the crank arm has a crank axle mounting hole, and further comprising a plurality of splines disposed in the crank axle mounting hole.~~

25 32. The drive mechanism according to claim 1 wherein an outer peripheral surface of the drive member at a location of intersection with a radially inner portion of the first abutment extends at a substantially constant radius of curvature for more than 20°.

✓ 25 33. The drive mechanism according to claim 1 wherein the crank arm has a crank axle mounting hole and a plurality of splines disposed in the crank axle mounting hole, and wherein a plane containing an inner side surface of the drive member is disposed laterally inwardly from laterally inner ends of the plurality of splines.

30 ✓ 34. The drive mechanism according to claim 33 wherein the plane is disposed at least 5 millimeters laterally inwardly from the laterally inner ends of the plurality of splines.

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35. A drive mechanism for a bicycle transmission assist mechanism comprising:  
a bicycle crank arm having a crank axle mounting boss; and  
only two abutments disposed on an outer surface of the crank axle mounting boss and  
facing a forward rotational direction of the crank arm.

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36. A drive mechanism for a bicycle transmission assist mechanism comprising:  
a bicycle crank arm having a crank axle mounting boss; and  
a drive member disposed at the crank axle mounting boss and including:  
an outer peripheral surface,

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wherein an abutment is disposed on the outer peripheral surface and facing a  
forward rotational direction of the crank arm; and

wherein the outer peripheral surface at a location of intersection with a radially  
inner portion of the abutment extends convex for at least 20°.

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37. A drive mechanism for a bicycle transmission assist mechanism comprising:  
a crank arm extending along a crank arm axis and having a crank axle mounting boss  
defining a crank axle mounting hole; and  
a drive member disposed at the crank axle mounting boss and radially outwardly from  
the crank axle mounting hole, wherein the drive member forms an abutment disposed at an  
inner side of the crank arm, facing in a forward rotational direction and spaced laterally from  
an inner side surface of the crank arm.

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